

CHARACTERIZING THE SHAPLEY VALUE TO DETERMINE THE VOTING
POWER IN MALAYSIAN GENERAL ELECTION 2013

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Special dedication to my supportive parents,
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ABSTRACT

This study was carried out to investigate the use of Shapley-Shubik power index in modeling decision Malaysian general elections for 2013. The selection model based on the actual results of the 13th general election using the Shapley value, as proposed in this study is to determine the power of each party in the coalition to contest either the winning or losing combination. This was done by comparing the change in percentage of votes at 5%, 10% and 15% for each constituency. By using the Shapley value for each competing party, the study found that in most cases as a set percentage, UMNO is a major player or player who are indispensable axis by a coalition to win general election. Parti Pesaka Bumiputera Bersatu (PBB) is a great partner for UMNO to form a strong coalition. In addition, the use of Shapley-Shubik power index based on the actual results of the 13th general election is effective is to identify how the value of a party whether it is needed or not in determining a winning coalition. By using the Shapley value approach, an equitable distribution of federal cabinet seats in parliament, won the seat can be verified based on the data of 2013 federal cabinet seat.

ABSTRAK

Kajian ini dilakukan bertujuan mengkaji penggunaan kuasa indeks Shapley-Shubik dalam pemodelan keputusan pilihanraya umum Malaysia bagi tahun 2013. Pemilihan model yang berdasarkan keputusan sebenar pilihanraya umum ke-13 dengan menggunakan kaedah nilai Shapley sepertimana yang dicadangkan dalam kajian ini adalah bagi menentukan kuasa setiap parti yang bertanding samada di dalam gabungan yang menang mahupun gabungan yang kalah. Kajian dilakukan dengan membandingkan dari segi peratusan perubahan undi iaitu sebanyak 5%, 10% dan 15% bagi setiap kawasan parlimen. Dengan menggunakan nilai Shapley yang diperolehi bagi setiap parti yang bertanding, kajian mendapati bahawa dalam kebanyakan kes mengikut peratusan yang ditetapkan, UMNO merupakan pemain utama ataupun pemain paksi yang sangat diperlukan oleh sesuatu gabungan parti untuk memenangi pilihanraya umum. Manakala parti komponen yang menjadi pasangan terbaik untuk UMNO bagi membentuk gabungan parti yang mantap adalah Parti Pesaka Bumiputera Bersatu (PBB). Di samping itu, penggunaan kuasa indeks Shapley-Shubik berdasarkan keputusan sebenar pilihanraya umum ke-13 ini nyata berkesan untuk mengenalpasti betapa nilainya sesuatu parti samada sangat diperlukan atau tidak dalam menentukan kemenangan sesebuah gabungan parti. Dengan menggunakan pendekatan nilai Shapley, kesamarataan pembahagian kerusi cabinet persekutuan mengikut parlimen yang dimenangi dapat ditentusahkan berdasarkan data kerusi cabinet persekutuan 2013 yang sebenar.